
Subject: Re: [ANNOUNCE] first stable release of OpenVZ kernel virtualization solution

Posted by [Philippe Pegon](#) on Sat, 10 Dec 2005 11:22:59 GMT

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Hello,

By curiosity, what is the status for IPv6 in OpenVZ (I saw that it was in the roadmap on the website, but maybe you have more informations) ?

thanks

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Philippe Pegon

Kirill Korotaev wrote:

> Hello,

>

> We are happy to announce the release of a stable version of the OpenVZ software, located at <http://openvz.org/>.

>

> OpenVZ is a kernel virtualization solution which can be considered as a natural step in the OS kernel evolution: after multiuser and multitasking functionality there comes an OpenVZ feature of having multiple environments.

>

> Virtualization lets you divide a system into separate isolated execution environments (called VPSs - Virtual Private Servers). From the point of view of the VPS owner (root), it looks like a stand-alone server. Each VPS has its own filesystem tree, process tree (starting from init as in a real system) and so on. The single-kernel approach makes it possible to virtualize with very little overhead, if any.

>

> OpenVZ in-kernel modifications can be divided into several components:

>

> 1. Virtualization and isolation.

> Many Linux kernel subsystems are virtualized, so each VPS has its own:

> - process tree (featuring virtualized pids, so that the init pid is 1);

> - filesystems (including virtualized /proc and /sys);

> - network (virtual network device, its own ip addresses,

> set of netfilter and routing rules);

> - devices (if needed, any VPS can be granted access to real devices

> like network interfaces, serial ports, disk partitions, etc);

> - IPC objects.

>

> 2. Resource Management.

> This subsystem enables multiple VPSs to coexist, providing managed resource sharing and limiting.

> - User Bouncounters is a set of per-VPS resource counters, limits,

- > and guarantees (kernel memory, network buffers, phys pages, etc.).
- > - Fair CPU scheduler (SFQ with shares and hard limits).
- > - Two-level disk quota (first-level: per-VPS quota;
- > second-level: ordinary user/group quota inside a VPS)
- >
- > Resource management is what makes OpenVZ different from other solutions
- > of this kind (like Linux VServer or FreeBSD jails). There are a few
- > resources that can be abused from inside a VPS (such as files, IPC
- > objects, ...) leading to a DoS attack. User Beancounters prevent such
- > abuses.
- >
- > As virtualization solution OpenVZ makes it possible to do the same
- > things for which people use UML, Xen, QEmu or VMware, but there are
- > differences:
- > (a) there is no ability to run other operating systems
- > (although different Linux distros can happily coexist);
- > (b) performance loss is negligible due to absense of any kind of
- > emulation;
- > (c) resource utilization is much better.
- >
- > The last point needs to be elaborated on. OpenVZ allows to utilize
- > system resources such as memory and disk space very efficiently, and
- > because of that has better performance on memory-critical workloads.
- > OpenVZ does not run separate kernels in each VPS and saves memory on
- > kernel internal data. However, even bigger efficiency of OpenVZ comes
- > from dynamic resource allocation.
- >
- > With other virtualization solutions, you need to specify in advance the
- > amount of memory for each virtual machine and create a disk device and
- > filesystem for it, and the possibilities to change settings later on the
- > fly are very limited.
- >
- > The dynamic assignment of resources in OpenVZ can significantly improve
- > their utilization. For example, a x86_64 box (2.8 GHz Celeron D, 1GB
- > RAM) is capable to run 100 VPSs with a fairly high performance (VPSs
- > were serving http requests for 4.2Kb static pages at an overall rate of
- > more than 80,000 req/min). Each VPS (running CentOS 4 x86_64) had the
- > following set of processes:
- >
- > [root@ovz-x64 ~]# vzctl exec 1043 ps axf
- > PID TTY STAT TIME COMMAND
- > 1 ? Ss 0:00 init
- > 11830 ? Ss 0:00 syslogd -m 0
- > 11897 ? Ss 0:00 /usr/sbin/sshd
- > 11943 ? Ss 0:00 xinetd -stayalive -pidfile ...
- > 12218 ? Ss 0:00 sendmail: accepting connections
- > 12265 ? Ss 0:00 sendmail: Queue runner@01:00:00
- > 13362 ? Ss 0:00 /usr/sbin/httpd

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> 13363 ?    S    0:00 \_ /usr/sbin/httpd
> 13364 ?    S    0:00 \_ /usr/sbin/httpd
> 13365 ?    S    0:00 \_ /usr/sbin/httpd
> 13366 ?    S    0:00 \_ /usr/sbin/httpd
> 13370 ?    S    0:00 \_ /usr/sbin/httpd
> 13371 ?    S    0:00 \_ /usr/sbin/httpd
> 13372 ?    S    0:00 \_ /usr/sbin/httpd
> 13373 ?    S    0:00 \_ /usr/sbin/httpd
> 6416 ?    Rs   0:00 ps axf
```

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>
> And the list of running VPSs:
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>
> [root@ovz-x64 ~]# vzlist
>  VPSID    NPROC STATUS IP_ADDR    HOSTNAME
>   1001     15 running 10.1.1.1    vps1001
>   1002     15 running 10.1.1.2    vps1002
>   [...skipped....]
>   1099     15 running 10.1.1.99   vps1099
>   1100     15 running 10.1.1.100  vps1100
```

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>
> On the box with 4Gb of RAM one can expect 400 of such VPSs to run
> without much troubles.
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>
> More information is available at http://openvz.org/
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>
> Thanks,
> OpenVZ team.
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> -
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